<110> Richard Dennis DiMarchi
David Lee Smiley
Lianshan Zhang

<120> MODIFIED GLUCAGON-LIKE PEPTIDE-1 ANALOGS

<130> X-15642 National Phase

<160> 24

<170> PatentIn version 3.2

<210> 1
<211> 31
<212> PRT
<213> Artificial

<220>
<223> Synthetic constructs

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa= L-histidine, D-histidine, desamino-histidine, 2-amino-histidine, beta-hydroxy-

histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa= Ala, Gly, Val, Leu, Ile, Ser, or Thr

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa= Phe, Trp, or Tyr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa= Val, Trp, Ile, Leu, Phe, or Tyr

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa= Ser, Trp, Tyr, Phe, Lys, Ile, Leu, Val

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa= Tyr, Trp, or Phe

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa= Leu, Phe, Tyr, or Trp

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa= Gly, Glu, Asp, Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa= Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa= Glu, Ile, or Ala

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa= Ala, or Glu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa= Val, or Ile

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa= L-Cys, D-Cys, homocysteine, or penicillamine

<400> 1

Xaa Xaa Glu Gly Thr Xaa Thr Ser Asp Xaa Ser Xaa Xaa Xaa Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Xaa Phe Ile Xaa Trp Leu Xaa Lys Gly Arg Xaa
20 25 30

<210> 2
<211> 31
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa= L-histidine, D-histidine, desamino-histidine,
2-amino-histidien, beta-hydroxy-

histidine, homohistidine, alpha-fluoromethyl-histidine, or
alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa= Gly, Ala, Val, Leu, Ile, Ser or Thr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Val, Phe, Tyr, or Trp

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = Ser, Tyr, Trp, Phe, Lys, Ile, Leu, or Val

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Clu, Asp, or Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa = L-Cys, D-Cys, homocysteine, or penicillamine

<400> 2

Xaa Xaa Glu Gly Thr Phe Thr Ser Asp Xaa Ser Xaa Tyr Leu Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Glu Phe Ile Ala Trp Leu Xaa Lys Gly Arg Xaa
20 25 30

<210> 3
<211> 42
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine, 2-amino-histidine, beta-hydroxy-

histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Ala, Gly, Val, Leu, Ile, Ser, or Thr

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Phe, Trp, or Tyr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Val, Trp, Ile, Leu, Phe, or Tyr

<220>
<221> MISC_FEATURE
<222> (12)..(12)

<223> Xaa = Ser, Trp, Tyr, Phe, Lys, Ile, Leu, Val

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = Tyr, Trp, or Phe

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa = Leu, Phe, Tyr, or Trp

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, or Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa = Glu, Ile, or Ala

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa = Ala or Glu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> Xaa = Lys, Asp, Arg, or Glu

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa = Gly, Pro, or Arg

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa = Gly, Pro, Ser, L-Cys, D-Cys, homocysteine, or penicillamine

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> Xaa = Ser, Pro, His, L-Cys, D-Cys, homocysteine, penicillamine, NH2

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa = Ser, Arg, Thr, Trp, Lys, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or

is absent

<220>

<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa = Ser, Gly, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> Xaa = Ala, Asp, Arg, Glu, Lys, Gly, L-Cys, D-Cys, homocysteine, penicillamine,

NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa = Pro, Ala, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa = Pro, Ala, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa = Pro, Ala, Arg, Lys, His, L-Cys, D-Dys, homocysteine, penicillamine, NH2 or

is absent

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa = Ser, His, Pro, Lys, Arg, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or

is absent

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa = His, Ser, Arg, Lys, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or

is absent

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa = His, Ser, Arg, Lys, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or

is absent

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa = L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<400> 3

Xaa Xaa Glu Gly Thr Xaa Thr Ser Asp Xaa Ser Xaa Xaa Xaa Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Xaa Phe Ile Xaa Trp Leu Xaa Xaa Gly Xaa Xaa Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40

<210> 4
<211> 42
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine, 2-amino-histidine, beta-hydroxy-

histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Gly, Val, Leu, Ile, Ser, or Thr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Val, Trp, Ile, Leu, Phe, or Tyr

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, or Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> Xaa = Lys, Asp, Arg, or Glu

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa = Gly, Pro, or Arg

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa = Gly, Pro, Ser, L-Cys, D-Cys, homocysteine, or penicillamine

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> Xaa = Ser, Pro, His, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa = Ser, Arg, Thr, Trp, Lys, L-Cys, D-Cys, homocysteine, penicillamine, NH2

or is absent

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa = Ser, Gly, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> Xaa = Ala, Asp, Arg, Glu, Lys, Gly, L-Cys, D-Cys, homocysteine, penicillamine,

NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa = Pro, Ala, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa = Pro, Ala, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa = Pro, Ala, Arg, Lys, His, L-Cys, D-Cys, homocysteine, penicillamine, NH2

or is absent

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa = Ser, His, Pro, Lys, Arg, L-Cys, D-Cys, homocysteine, penicillamine, NH2

or is absent

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa = His, Ser, Arg, Lys, L-Cys,D-Cys, homocysteine, penicillamine, NH2, or

is absent

<220>
<221> MISC_FEATURE
<222> (41)..(41)

<223> Xaa = His, Ser, Arg, Lys, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or

is absent

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa - L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<400> 4

Xaa Xaa Glu Gly Thr Phe Thr Ser Asp Xaa Ser Ser Tyr Lys Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Glu Phe Ile Ala Trp Leu Xaa Xaa Gly Xaa Xaa Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40

<210> 5
<211> 42
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine, 2-amino-histidine, beta-hydroxy-

histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Gly, Val, Leu, Ile, Ser, or Thr

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, or Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> Xaa = Ser, Pro, His, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa = Ser, Arg, Thr, Trp, Lys, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is

absent

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa = Ser, Gly, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> Xaa = Ala, Asp, Arg, Glu, Lys, Gly, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa = Pro, Ala, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa = Pro, Ala, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa = Pro, Ala, Arg, Lys, His, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa = Ser, His, Pro, Lys, Arg, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa = His, Ser, Arg, Lys, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa = His, Ser, Arg, Lys, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa = L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<400> 5

Xaa Xaa Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Lys Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Glu Phe Ile Ala Trp Leu Xaa Lys Gly Gly Pro Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40

<210> 6
<211> 45
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine, 2-amino-histidine, beta-hydroxy-histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Ala, Gly, Val, Leu, Ile, Ser or Thr

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Phe, Trp, or Tyr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Val, Trp, Ile, Leu, Phe, or Tyr

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = Ser, Trp, Tyr, Phe, Lys, Ile, Leu, Val

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = Tyr, Trp, or Phe

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa = Leu, Phe, Tyr, or Trp

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, or Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE

<222> (21)..(21)
<223> Xaa = Glu, Ile, or Ala

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa = Ala, or Glu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> Xaa = Lys, Asp, Arg, or Glu

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa = Gly, Pro, or Arg

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa = Gly, Pro, or Ser

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> Xaa = Ser, Pro, or His

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa = Ser, Arg, Thr, Trp, or Lys

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa = Ser or Gly

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> Xaa = Ala, Asp, Arg, Glu, Lys, or GLy

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa = Pro, Ala, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa = Pro, Ala, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa = Pro, Ala, Arg, Lys, His, NH2, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>

<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa = Ser, His, Pro, Lys, Arg, Gly, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa = His, Ser, Arg, Lys, Pro, Gly, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa = His, Ser, Arg, Lys, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa = Gly, His, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> Xaa = Pro, His, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (44)..(44)
<223> Xaa = Ser, His, Ser-NH2, His-NH2, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (45)..(45)
<223> Xaa = L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<400> 6

Xaa Xaa Glu Gly Thr Xaa Thr Ser Asp Xaa Ser Xaa Xaa Xaa Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Xaa Phe Ile Xaa Trp Leu Xaa Xaa Gly Xaa Xaa Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40 45

<210> 7
<211> 45
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> Xaa = Ser, Pro, or His

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa = Ser, Arg, Thr, Trp, or Lys

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa = Ser or Gly

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> Xaa = Ala, Asp, Arg, Glu, Lys, or Gly

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa = Pro, Ala, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa = Pro, Ala, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa = Pro, Ala, Arg, Lys, His, NH2, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa = Ser, His, Pro, Lys, Arg, Gly, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa = His, Ser, Arg, Lys, Pro, Gly, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa = His, Ser, Arg, Lys, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa = Gly, His, L-Cys, D-Cys, homocysteine, penicillamine, HN2, or is absent

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> Xaa = Pro, His, L-Cys, D-Cys, homocysteine, penicillamine, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (44)..(44)

<223> Xaa = Ser, His, Ser-NH2, His-NH2, L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (45)..(45)
<223> Xaa = L-Cys, D-Cys, homocysteine, penicillamine, NH2, or is absent

<400> 7

```
His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1               5                  10                  15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Gly Pro Xaa
            20                  25                  30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
        35                  40                  45
```

<210> 8
<211> 31
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine, 2-amino-histidine beta-hydroxy-

histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Ala, Gly, Val, Leu, Ile, Ser, or Thr

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa - Phe, Trp, or Tyr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Val, Trp, Ile, Leu, Phe, or Tyr

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = Ser, Trp, Tyr, Phe, Lys, Ile, Leu, Val

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = Tyr, Trp, or Phe

<220>

<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa = Leu, Phe, Tyr, or Trp

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa = Glu, Ile, or Ala

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa = Ala or Glu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<400> 8

Xaa Xaa Glu Gly Thr Xaa Thr Ser Asp Xaa Ser Xaa Xaa Xaa Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Xaa Phe Ile Xaa Trp Leu Xaa Lys Gly Arg Lys
20 25 30

<210> 9
<211> 31
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine, 2-amino-histidine, beta-hydroxy-

histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Gly, Ala, Val, Leu, Ile, Ser, or Thr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Val, Phe, Tyr, or Trp

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = Ser, Tyr, Trp, Phe, Lys, Ile, Leu, or Val

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, or Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<400> 9

Xaa Xaa Glu Gly Thr Phe Thr Ser Asp Xaa Ser Xaa Tyr Leu Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Glu Phe Ile Ala Trp Leu Xaa Lys Gly Arg Lys
20 25 30

<210> 10
<211> 42
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine, 2-amino-histidine, beta-hydroxy-

histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Ala, Gly, Val, Leu, Ile, Ser, or Thr

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Phe, Trp, or Tyr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Val, Trp, Ile, Leu, Phe, or Tyr

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = Ser, Trp, Tyr, Phe, Lys, Ile, Leu, Val

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = Tyr, Trp, or Phe

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa = Leu, Phe, Tyr, or Trp

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, or Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa = Glu, Ile, or Ala

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa = Ala or Glu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> Xaa = Lys, Asp, Arg, or Glu

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa = Gly, Pro, or Arg

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa = Gly, Pro, Ser, or Lys

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> Xaa = Ser, Pro, His, Lys, NH2

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa = Ser, Arg, Thr, Trp, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa = Ser, Gly, Lys, NH2 or is absent

<220>

<221> MISC_FEATURE
<222> (35)..(35)
<223> Xaa = Ala, Asp, Arg, Glu, Lys, Gly, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa = Pro, Ala, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa = Pro, Ala, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa = Pro, Ala, Arg, Lys, His, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa = Ser, His, Pro, Lys, Arg, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa = His, Ser, Arg, Lys, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa = His, Ser, Arg, Lys, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa = Lys, NH2, or is absent

<400> 10

Xaa Xaa Glu Gly Thr Xaa Thr Ser Asp Xaa Ser Xaa Xaa Xaa Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Xaa Phe Ile Xaa Trp Leu Xaa Xaa Gly Xaa Xaa Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40

<210> 11
<211> 42
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine,
2-amino-histidine, beta-hydroxy-

histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Gly, Val, Leu, Ile, Ser, or Thr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Val, Trp, Ile, Leu, Phe, or Tyr

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, or Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> Xaa = Lys, Asp, Arg, or Glu

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa = Gly, Pro, or Arg

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa = Gly, Pro, Ser or Lys

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> Xaa = Ser, Pro, His, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa = Ser, Arg, Thr, Trp, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa = Ser, Gly, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> Xaa = Ala, Asp, Arg, Glu, Lys, Gly, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (36)..(36)

<223> Xaa = Pro, Ala, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa = Pro, Ala, Lys, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa = Pro, Ala, Arg, Lys, His, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa = Ser, His, Pro, Lys, Arg, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa = His, Ser, Arg, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa = His, Ser, Arg, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa = Lys, NH2, or is absent

<400> 11

Xaa Xaa Glu Gly Thr Phe Thr Ser Asp Xaa Ser Ser Tyr Lys Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Glu Phe Ile Ala Trp Leu Xaa Xaa Gly Xaa Xaa Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40

<210> 12
<211> 42
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine,
2-amino-histidine, beta-hydroxy-histidine, homohistidine,
alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Gly, Val, Leu, Ile, Ser, or Thr

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, or Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa =Val or Ile

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> Xaa= Ser, Pro, His, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa = Ser, Arg, Thr, Trp, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa = Ser, Gly, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> Xaa = Ala, Asp, Arg, Glu, Lys, Gly, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa = Pro, Ala, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa = Pro, Ala, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa = Pro, Ala, Arg, Lys, His, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa = Ser, His, Pro, Lys, Arg, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa = His, Ser, Arg, Lys, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa = His, Ser, Arg, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE

<222> (42)..(42)
<223> Xaa = Lys, NH2, or is absent

<400> 12

Xaa Xaa Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Lys Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Glu Phe Ile Ala Trp Leu Xaa Lys Gly Gly Pro Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40

<210> 13
<211> 45
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine, 2-amino-histidine, beta-hydroxy-histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Ala, Gly, Val, Leu, Ile, Ser, or Thr

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Phe, Trp or Tyr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Val, Trp, Ile, Leu, Phe, or Tyr

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = Ser, Trp, Tyr, Phe, Lys, Ile, Leu, Val

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = Tyr, Trp, or Phe

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa = Leu, Phe, Tyr, or Trp

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, or Lys

<220>
<221> MISC_FEATURE
<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa = Glu, Ile, or Ala

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa = Ala or Glu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (28)..(28)
<223> Xaa = Lys, Asp, Arg, or Glu

<220>
<221> MISC_FEATURE
<222> (30)..(30)
<223> Xaa = Gly, Pro, or Arg

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa = Gly, Pro, or Ser

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> Xaa = Ser, Pro, or His

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa = Ser, Arg, Thr, Trp, or Lys

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa = Ser, Gly

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> Xaa = Ala, Asp, Arg, Glu, Lys, or Gly

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa = Pro, Ala, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa = Pro, Ala, Lys, NH2 or is absent

<220>

<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa = Pro, Ala, Arg, Lys, His, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa = Ser, His, Pro, Lys, Arg, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa = His, Ser, Arg, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa = His, Ser, Arg, Lys, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa = Lys, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> Xaa = Pro, His, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (44)..(44)
<223> Xaa = Ser, His, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (45)..(45)
<223> Xaa = Lys, NH2 or is absent

<400> 13

Xaa Xaa Glu Gly Thr Xaa Thr Ser Asp Xaa Ser Xaa Xaa Xaa Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Xaa Phe Ile Xaa Trp Leu Xaa Xaa Gly Xaa Xaa Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40 45

<210> 14
<211> 45
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (32)..(32)
<223> Xaa = Ser, Pro, or His

<220>
<221> MISC_FEATURE
<222> (33)..(33)
<223> Xaa = Ser, Arg, Thr, Trp, or Lys

<220>
<221> MISC_FEATURE
<222> (34)..(34)
<223> Xaa = Ser, or Gly

<220>
<221> MISC_FEATURE
<222> (35)..(35)
<223> Xaa = Ala, Asp, Arg, Glu, Lys, or Gly

<220>
<221> MISC_FEATURE
<222> (36)..(36)
<223> Xaa = Pro, Ala, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (37)..(37)
<223> Xaa = Pro, Ala, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (38)..(38)
<223> Xaa = Pro, Ala, Arg, Lys, His, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (39)..(39)
<223> Xaa = Ser, His, Pro, Lys, Arg, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (40)..(40)
<223> Xaa = His, Ser, Arg, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (41)..(41)
<223> Xaa = His, Ser, Arg, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (42)..(42)
<223> Xaa = Lys, NH2, or is absent

<220>
<221> MISC_FEATURE
<222> (43)..(43)
<223> Xaa = Pro, His, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (44)..(44)
<223> Xaa = Ser, His, Lys, NH2 or is absent

<220>
<221> MISC_FEATURE
<222> (45)..(45)
<223> Xaa = Lys, NH2 or is absent

<400> 14

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Gly Pro Xaa
20 25 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
35 40 45

<210> 15
<211> 31
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa = L-histidine, D-histidine, desamino-histidine, 2-amino-histidine, beta-hydroxy-

histidine, homohistidine, alpha-fluoromethyl-histidine, or alpha-methyl-histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = Ala, Gly, Val, Leu, Ile, Ser orThr

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> Xaa = Phe, Trp, Tyr

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa = Val, Trp, Ile, Leu, Phe, or Tyr

<220>
<221> MISC_FEATURE
<222> (12)..(12)
<223> Xaa = Ser, Trp, Tyr, Phe, Lys, Ile, Leu, Val

<220>
<221> MISC_FEATURE
<222> (13)..(13)
<223> Xaa = Tyr, Trp, or Phe

<220>
<221> MISC_FEATURE
<222> (14)..(14)
<223> Xaa = Leu, Phe, Tyr, or Trp

<220>
<221> MISC_FEATURE
<222> (16)..(16)
<223> Xaa = Gly, Glu, Asp, Lys

<220>
<221> MISC_FEATURE

<222> (19)..(19)
<223> Xaa = Ala, Val, Ile, or Leu

<220>
<221> MISC_FEATURE
<222> (21)..(21)
<223> Xaa = Glu, Ile, or Ala

<220>
<221> MISC_FEATURE
<222> (24)..(24)
<223> Xaa = Ala or Glu

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa = Val or Ile

<220>
<221> MISC_FEATURE
<222> (31)..(31)
<223> Xaa = Gly, His, Lys, or NH2 or is absent

<400> 15

Xaa Xaa Glu Gly Thr Xaa Thr Ser Asp Xaa Ser Xaa Xaa Xaa Glu Xaa
1 5 10 15

Gln Ala Xaa Lys Xaa Phe Ile Xaa Trp Leu Xaa Lys Gly Arg Xaa
20 25 30

<210> 16
<211> 31
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<400> 16

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
20 25 30

<210> 17
<211> 39
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<400> 17

His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Cys
35

<210> 18
<211> 39
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MOD_RES
<222> (39)..(39)
<223> 2,2'-dithiolbis(5-dinitropyridine) is attached to the thiol of Cys at position 39

<400> 18

His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Cys
35

<210> 19
<211> 32
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<400> 19

His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Arg Gly Cys
20 25 30

<210> 20
<211> 32
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MOD_RES
<222> (32)..(32)
<223> S-sulfonate (SSO3) is attached to the thiol of Cys at position 32

<400> 20

His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Arg Gly Cys
20 25 30

<210> 21
<211> 32
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<400> 21

His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Arg Gly Lys
20 25 30

<210> 22
<211> 32
<212> PRT
<213> Artificial

<220>
<223> Synthetic construct

<220>
<221> MOD_RES
<222> (32)..(32)
<223> [3-(2-pyridyldithio)propanamide]amide is attached to Lys at position 32

<400> 22

His Val Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Glu
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Ile Lys Gly Arg Gly Lys
20 25 30

<210> 23
<211> 39
<212> PRT
<213> Heloderma suspectum

<220>
<221> MISC_FEATURE
<222> (1)..(39)
<223> Exendin-3

<400> 23

His Ser Asp Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu

1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Ser
35

<210> 24
<211> 39
<212> PRT
<213> Heloderma suspectum

<220>
<221> MISC_FEATURE
<222> (1)..(39)
<223> Exendin-4

<400> 24

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Ser
35